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EXAMINER

TSOY, ELENA

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 14

Application Number: 09/608,818

Filing Date: June 30, 2000

Appellant(s): CHEN ET AL.

Lee J. Fleckenstein
For Appellant

EXAMINER'S ANSWER

MAILED

MAR 18 2003

GROUP 1700

This is in response to the appeal brief filed January 21, 2003.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

All of the pending claims 1-22 stand or fall together.

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

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4,257,699	LENTZ	3-1981
5,995,796	SCHLUETER, Jr. ET AL	11-1999
5,549,948	BLONG ET AL	8-1996

For the above reasons, it is believed that the rejections should be sustained.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-22 are rejected under 35 U.S.C. 103 (a). This rejection is set forth in prior Office Action, Paper Nos. 3, 5 as follows:

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartley et al (US 4,853,737) and incorporated by reference Lentz (US 4,257,699) in view of Schlueter, Jr. et al (US 5,995,796).

Hartley et al disclose a method of making a fuser member having a support comprising the steps of providing a support (See column 8, lines 9-12); coating onto the support an organic solvent-based coating composition (See column 8, lines 4-6) comprising a fluoroelastomer, a curing agent having a bisphenol residue (See column 3, lines 5-11), a particulate filler containing a combination of (See column 6, lines 51-52) metal oxides such as zinc oxide, antimony oxide, tin oxide (See column 6, lines 42-53) and aminosiloxane (See column 2, lines 48-50; column 5, lines 27-46), the fluoroelastomer being terpolymers of vinylidene fluoride with hexafluoropropylene and tetrafluoroethylene such as commercially available Viton B (See column 3, lines 1-3); gradually raising the temperature of the coating composition from 20⁰C to 230⁰C for 12-24 hours and then curing at that temperature for 24 hours (See column 8, lines 26-

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33). It is well known in the art that commercially available Viton B is contains claimed subunits in an amount within claimed ranges, namely, $x = 61\%$, $y=17\%$ and $z=22\%$, as evidenced by Eddy et al (US 5,017,432, column 6, lines 4-6).

Although Hartley et al refer to a fluoropolymer such as Viton B as fluoroelastomer whereas Applicants refer to the fluoropolymer, which is substantially identical in structure and composition to that of Hartley et al, as fluorocarbon thermoplastic random copolymer, it is the Examiner's position they are **not patentably distinct**.

It is held that where the claimed and prior art products are identical or **substantially identical in structure or composition**, or are produced by identical or substantially identical processes, **claimed properties or functions are presumed to be inherent**. See MPEP 2111.02, 2112.01. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). In other words, no matter how a compound is called, it does not change its inherent properties.

Hartley et al further teach that one skilled in the art can compare the release of various cured fluoroelastomers containing the metal oxides to determine the optimum metal oxide or combination thereof and concentrations thereof (See column 6, lines 49-53).

Hartley et al fail to teach that the optimum metal oxide combination contains antimony doped tin oxide; and curing time for the coating composition at temperature from 20°C to 275°C is 5-10 hours.

As to antimony doped tin oxide, Schlueter, Jr. et al teach that antimony doped tin oxides (optionally in a combination with other metal oxides such as zinc oxide (See column 4, lines 57-

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67; column 12, lines 4, 8)) added to a fluoroelastomer/aminosiloxane copolymer allows for a stable resistivity virtually unaffected by changes in relative humidity and temperature and provides optimal conductivity (See column 10, lines 25, 40-68) for the filled copolymer (See column 4, lines 1-67; column 5, lines 1-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used antimony doped tin oxides in a combination with zinc oxide for filling a fluoroelastomer/aminosiloxane copolymer of Hartley et al with the expectation of providing the desired stable resistivity and optimal conductivity, as taught by Schueter, Jr. et al.

As to the curing time for the coating composition at temperature from 20⁰C to 275⁰C being 5-10 hours, one of ordinary skill in the art would know that curing time depends on materials of a coating composition. It is held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by routine experimentation the optimum curing time (including) in the absence of a showing of criticality.

Since an organic solvent-based coating composition of Hartley et al in view of Schlueter, Jr. et al comprising a fluoropolymer containing about 61 % of vinylidene fluoride, about 17 % of hexafluoropropylene and about 22 % of tetrafluoroethylene, zinc oxide, antimony doped tin oxide, aminosiloxane and a bisphenol curing agent, is substantially identical to composition as claimed, it would be reasonably expected that optimal curing conditions would be also within claimed parameters such as claimed range of 25-120 ⁰C and 5-10 hours.

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As to claim 2, Hartley further teaches that aminosiloxane is amino functional polydimethyl siloxane copolymer. See column 5, lines 27-45.

As to claim 3, Hartley further teaches that amino functional unit of polydimethyl siloxane copolymer is (aminoisopropyl)methyl (See column 5, lines 42-46) or aminopropyl (See column 11, lines 5-6).

It is held that compounds which are position isomers (compounds having the same radicals in physically different positions on the same nucleus) or homologs (compounds differing regularly by the successive addition of the same chemical group, e.g., by -CH₂- groups) are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977). See also In re May, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978) (stereoisomers prima facie obvious). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted (aminoisopropyl)methyl of Hartley with its position isomer (aminopropyl)methyl with the expectation of maintaining the desired benefits since a presumed expectation that both compounds possess similar properties.

As to claims 4, 5, 6, Hartley further teaches that aminosiloxane has total concentration in a coated layer of 1-15 percent. See column 5, lines 60-68; column 6, lines 1-8.

As to claims 7, 8, Hartley further teaches that a mixture of fillers containing zinc oxide has total concentration of 10-100 weight percent based on weight of the cured fluoroelastomer. See column 6, lines 3-8, 45-46.

As to claim 9, Hartley further teaches that the fluoroelastomer is cured by bisphenol curing agent. See column 3, lines 5-55.

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As to claim 10, Hartley further teaches that the fuser member may optionally contain resilient layers (a cushion layer) between a core and a coating layer. See column 8, lines 9-19.

As to claim 11, Hartley further teaches that the fluoroelastomer is nucleophilic addition cured. See column 3, lines 5-15.

As to claims 12-14, Hartley further teaches that any known fluoroelastomers derived from terpolymers of vinylidene fluoride with hexafluoropropylene and tetrafluoroethylene (i.e. terpolymers having subunits of $-(CH_2CF_2)_x-$, $-(CF_2CF(CF_3))_y-$, $-(CF_2CF_2)_z-$) can be used for preparation of fuser roll surfaces. See column 2, lines 39-44; column 3, lines 1-4. It is well known in the art that a fluoroelastomer having x number of 49 mole %, y number of 10 mole % and z number of more than 40 mole %, is commercially available as "3M THV". It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used commercially available fluoroelastomer "3M THV" for coating a fuser member with the expectation of providing the fuser member with the desired benefits, as taught by Hartley.

As to claims 15, Schlueter, Jr. further teaches that antimony doped tin oxide is added to a fluoroelastomer/aminosiloxane copolymer in an amount 5-65 weight percent of total solids. See column 11, lines 57-65.

As to claims 16, antimony doped tin oxide has 6.5 weight percent of antimony. See column 11, line 49.

As to claims 17-20, Hartley further teaches that non-crosslinked fluoroelastomers that have been used for preparation of fuser roll surfaces are known materials such as those described in Lentz (incorporated by reference in Hartley). See column 2, lines 39-44. The known materials of Lentz may be represented as mixtures of fluoroelastomers having molecular weight in the

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range of 1,000-200,000 (See column 9, lines 21-26) such as Viton B and polytetrafluoroethylene (fluorinated resin) (See column 8, lines 46-56, 65-67; column 9, lines 5-6).

However, Hartley and incorporated by reference Lentz fail to teach that ratio of Viton type fluoroelastomer to PTFE in the mixture is between 1:1 to 50:1.

One of ordinary skill in the art would know that some toners could be only fixed at high temperatures that would require high heat stability of a fuser member. It is well known in the art that addition of PTFE to the Viton type fluoroelastomer would increase heat stability of the resulting mixture. Therefore, amount of PTFE in the mixture is result-effective variable in a method of making the fuser member. It is held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by routine experimentation the optimum amount of PTFE (including claimed ratio between 1:1 to 50:1) in a mixture with Viton type fluoroelastomer depending on toner to be fixed.

Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartley et al (US 4,853,737) in view of Schlueter, Jr. et al (US 5,995,796) and Blong et al (US 5,549,948).

As to claims 1, 21, 22, Hartley et al disclose a method of making a fuser member having a support comprising the steps:

A) providing a support (See column 8, lines 9-12);

B) coating onto the support an organic solvent-based coating composition (See column 8, lines 4-6) comprising a fluorocarbon random copolymer of vinylidene fluoride with

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hexafluoropropylene and tetrafluoroethylene (THV) having subunits of $-(CH_2CF_2)_x-$, $-(CF_2CF(CF_3))_y-$, $-(CF_2CF_2)_z-$ (See column 2, lines 38-44, 56-66) such as commercially available Viton B wherein $x = 61\%$, about $y = 17\%$ and $z = 22\%$, as evidenced by US 5,017,432 (See column 6, lines 4-6), a curing agent having a bisphenol residue (See column 3, lines 5-11), a particulate filler containing a combination of (See column 6, lines 51-52) metal oxides such as zinc oxide, antimony oxide, tin oxide (See column 6, lines 42-53) and aminosiloxane (See column 2, lines 48-50; column 5, lines 27-46); and

C) curing said layer of the coating composition on said support for 12-24 hours at temperature in the range of 20°C to 230°C and then post curing at 232°C for 24 hours (See column 8, lines 26-33).

As to antimony doped tin oxide, Hartley et al fail to teach that the metal oxide combination contains antimony doped tin oxide.

Schlueter, Jr. et al teach that antimony doped tin oxides (optionally in a combination with other metal oxides such as zinc oxide (See column 4, lines 57-67; column 12, lines 4, 8)) added to a fluoroelastomer/aminosiloxane copolymer allows for a stable resistivity virtually unaffected by changes in relative humidity and temperature and provides optimal conductivity (See column 10, lines 25, 40-68) for the filled copolymer (See column 4, lines 1-67; column 5, lines 1-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used antimony doped tin oxides in a combination with zinc oxide for filling a fluoroelastomer/aminosiloxane copolymer of Hartley et al with the expectation of providing the desired stable resistivity and optimal conductivity, as taught by Schueter, Jr. et al.

As to curing of the coating composition being performed at temperature from 20°C to 120°C for 5-10 hours, combination of Hartley et al and Schueter, Jr. et al fails to teach that

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curing of the coating composition is performed at temperature from 20⁰C to 120⁰C for 5-10 hours.

Blong et al teach that a relatively new class of thermoplastic, chemically resistant, thermally stable, low permeable terpolymers of tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride comonomers combined in different ratios to get a range of different melting points (THV fluoropolymers) is commercially available and sold as a series or family of "3M THV Fluoroplastics" by the 3M Company. These fluoropolymers are more flexible and can be melt-processed at lower temperatures than most other fluoroplastics (See column 1, lines 34-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used as THV fluoroelastomers of a release layer of combination of Hartley et al and Schlueter, Jr. et al a commercially available series or family of thermoplastic "3M THV Fluoroplastics" comprising tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride comonomers combined in different ratios, with the expectation of providing the release layer with the desired chemical resistance, thermal stability, low permeability as well with a range of different melting points, as taught by Blong et al depending on the particular application.

One of ordinary skill in the art would know that curing temperature and time depend on components used and the amount of the components in a coating composition. Therefore, temperature and time for curing a coating composition of combination of Hartley et al and Schueter, Jr. et al would depend on particular THV fluoroelastomer used and the amount of zinc and antimony-doped tin oxides, aminosiloxanes and bisphenol containing curing agent. It is held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to

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discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by routine experimentation the optimum curing temperature and time (including claimed 20⁰C to 120⁰C for 5-10 hours) of an organic solvent-based coating composition of combination of Hartley et al and Schlueter, Jr. et al depending on particular THV fluoroelastomer used and the amount of zinc and antimony-doped tin oxides, aminosiloxanes and bisphenol containing curing agent.

As to claim 2, Hartley et al further teach that aminosiloxane is amino functional polydimethyl siloxane copolymer. See column 5, lines 27-45.

As to claim 3, Hartley et al further teach that amino functional unit of polydimethyl siloxane copolymer is (aminoisopropyl)methyl (See column 5, lines 42-46) or aminopropyl (See column 11, lines 5-6).

It is held that compounds which are position isomers (compounds having the same radicals in physically different positions on the same nucleus) or homologs (compounds differing regularly by the successive addition of the same chemical group, e.g., by -CH₂- groups) are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977). See also In re May, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978) (stereoisomers prima facie obvious). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted (aminoisopropyl)methyl of Hartley et al with its position isomer (aminopropyl)methyl with the expectation of maintaining the desired benefits since a presumed expectation that both compounds possess similar properties.

As to claims 4-6, Hartley et al further teach that aminosiloxane has total concentration in a coated layer of 1-15 percent. See column 5, lines 60-68; column 6, lines 1-8.

As to claims 7, 8, Hartley et al further teach that a mixture of fillers containing zinc oxide has total concentration of 10-100 weight percent based on weight of the cured fluoroelastomer. See column 6, lines 3-8, 45-46.

As to claim 9, Hartley et al further teach that the fluoroelastomer is cured by bisphenol curing agent. See column 3, lines 5-55.

As to claim 10, Hartley et al further teach that the fuser member may optionally contain resilient layers (a cushion layer) between a core and a coating layer. See column 8, lines 9-19.

As to claim 11, Hartley et al further teach that the fluoroelastomer is nucleophilic addition cured. See column 3, lines 5-15.

As to claims 12-14, Blong et al further teach that THV fluoroelastomers have $x = 10-45$ wt %, $y = 10-30$ wt % and $z = 30-70$ wt %. See column 2, lines 55-67; column 3, lines 1-5.

As to claims 15, 16, Schlueter, Jr. et al further teach that antimony doped tin oxide having 6.5 weight percent of antimony is added to a fluoroelastomer/aminosiloxane copolymer in an amount 5-65 weight percent of total solids. See column 11, lines 49, 57-65.

As to claims 17-20, Combination of Hartley et al, Schlueter, Jr. et al and Blong et al Hartley et al fails to teach that the fluorocarbon thermoplastic random copolymer comprises a fluorinated resin (Claim 17); the fluorinated resin having a number average molecular weight of 50,000-50,000,000 (Claim 18); the ratio of the fluorocarbon thermoplastic random copolymer to the fluorinated resin is between 1:1 to 50:1 (Claim 19); the fluorinated resin is polytetrafluoroethylene (PTFE) or fluoroethylenepropylene (Claim 20).

It is well known in the art that that some toners could be fixed only at high temperatures that would require high heat stability of a fuser member. It is also well known in the art that addition of PTFE to the thermoplastic fluoroelastomer would increase heat stability of the resulting mixture but decrease flexibility. Therefore, amount of PTFE in the mixture is result-effective variable in a method of making the fuser member. It is held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined by routine experimentation the optimum amount of PTFE (including claimed ratio between 1:1 to 50:1) in a mixture with fluoroelastomer depending on toner to be fixed.

Response to Arguments

Applicants' arguments filed January 21, 2003 have been fully considered but they are not persuasive.

(A) Applicants argue that fluoroelastomers such as that of combination of Hartley et al Lentz and Schlueter, Jr. et al, and fluorocarbon thermoplastic random copolymer as claimed are distinctly different materials.

The Examiner respectfully disagrees with this argument. First of all, a fluoropolymer of Hartley et al (no matter how it is called) is substantially identical to that of claimed invention because both fluoropolymers contain the same components such as subunits of $-(CH_2CF_2)_x-$, $-(CF_2CF(CF_3))_y-$, $-(CF_2CF_2)_z-$ in the same amount, namely x, y, z are in the claimed range, as acknowledged by the Applicant (See Appeal Brief, page 5, paragraph 3).

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As was discussed above, although a fluoropolymer such as Viton B of Hartley et al is called fluoroelastomer, whereas claimed fluoropolymer, which is substantially identical in structure and composition to that of Hartley et al, is called a fluorocarbon thermoplastic random copolymer, they are **not patentably distinct**.

It is held that where the claimed and prior art products are identical or **substantially identical in structure or composition**, or are produced by identical or substantially identical processes, **claimed properties or functions are presumed to be inherent**. See MPEP 2111.02, 2112.01. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). In other words, no matter how a compound is called, it does not change its inherent properties.

(B) Applicants argue that it is well known in the industry that Viton B is a fluoroelastomer that cannot have thermoplastic properties, and THV fluoropolymers are thermoplastic and cannot be fluoroelastomer (See specification, page 12, lines 23-32).

The Examiner respectfully disagrees with this argument. Firstly, according to Applicants' own material (See "Comparison of Dupont Dow Viton Fluoroelastomers"), Viton B can be processed by **injection molding, extrusion**, and calendering, i.e., Viton B has properties of **thermoplastic** materials. Secondly, in contradiction to Applicants' statement, both VITON and THV fluoropolymers are **fluoroelastomers**, as evidenced by Gilbert (US 2002/00011543, Abstract; [0007]).

(C) Applicants argue that a coating composition of Hartley et al in view of Schlueter, Jr. et al is patentably distinct since it is cured at substantially higher temperature.


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The Examiner respectfully disagrees with this argument. Since an organic solvent-based coating composition of Hartley et al in view of Schlueter, Jr. et al comprising a fluoropolymer containing about 61 % of vinylidene fluoride, about 17 % of hexafluoropropylene and about 22 % of tetrafluoroethylene, zinc oxide, antimony doped tin oxide, aminosiloxane and a bisphenol curing agent, is substantially identical to composition as claimed, it would be reasonably expected that optimum curing conditions would be also within claimed parameters such as claimed range of 25-120 °C and 5-10 hours.

Respectfully submitted,



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